

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claim 28 (new): A process for the production of plate-like alumina particles comprising the steps of:

forming a mixture of nano-sized particles of an aluminium precursor compound and a sufficient volume fraction of a diluent; and

heat treating the mixture to form substantially discrete plate-like alpha alumina particles dispersed in the diluent, wherein the step of heat treating the mixture is conducted below the melting point of the diluent.

Claim 29 (new): The process for the production of plate-like alumina particles according to claim 28, further comprising the step of removing the diluent after the step of heat treating.

Claim 30 (new): The process for the production of plate-like alumina particles according to claim 29, wherein the diluent is soluble in a solvent and the step of removing the diluent from the mixture comprises the step of washing with the solvent after the step of heat treating.

Claim 31 (new): The process for the production of plate-like alumina particles according to claim 30, wherein the solvent is water or an alcohol.

Claim 32 (new): The process for the production of plate-like alumina particles according to claim 28, wherein the sufficient volume fraction of the diluent is at least 80% of the total volume of the mixture.

Claim 33 (new): The process for the production of plate-like alumina particles according to claim 28, wherein the diluent is a metal salt.

Claim 34 (new): The process for the production of plate-like alumina particles according to claim 33, wherein the metal salt is selected from the group consisting of sodium sulphate, potassium sulphate, sodium chloride and mixtures thereof.

Claim 35 (new): The process for the production of plate-like alumina particles according to claim 28, further comprising the step of adding a mineraliser to the diluent to form a diluent-mineraliser system.

Claim 36 (new): The process for the production of plate-like alumina particles according to claim 35, wherein the mineraliser is a metal fluoride.

Claim 37 (new): The process for the production of plate-like alumina particles according to claim 35, wherein the metal fluoride is selected from the group consisting of sodium fluoride, calcium fluoride, aluminium fluoride, sodium aluminium fluoride and mixtures thereof.

Claim 38 (new): The process for the production of plate-like alumina particles according to claim 35, wherein the step of heat treating the mixture is conducted below the liquidus of the diluent-mineraliser system.

Claim 39 (new): The process for the production of plate-like alumina particles according to claim 28, wherein the aluminium precursor compound is selected from the group consisting of aluminium hydroxide, aluminium sulphate, aluminium nitrate, aluminium chloride and mixtures thereof.

Claim 40 (new): The process for the production of plate-like alumina particles according to claim 28, wherein the nano-sized particles of the alumina precursor compound are substantially discrete.

Claim 41 (new): A process for the production of ultrafine plate-like alumina particles having a high aspect ratio comprising the steps of:

milling a mixture of an aluminium precursor compound and a sufficient volume fraction of a diluent to form a dispersion of nano-sized particles of an intermediate aluminium compound in the diluent; and,

thereafter heat treating the dispersion to convert the nano-sized particles of the intermediate aluminium compound to substantially discrete plate-like particles of alpha alumina.

Claim 42 (new): The process for the production of plate-like alumina particles according to claim 41, further comprising the step of removing the diluent from the mixture after the step of heat treating.

Claim 43 (new): The process for the production of plate-like alumina particles according to claim 42, wherein the step of removing the diluent comprises the step of washing with a solvent which selectively dissolves the diluent while not reacting with the plate-like alumina particles.

Claim 44 (new): The process for the production of plate-like alumina particles according to claim 41, wherein the precursor aluminium compound is aluminium hydroxide or aluminium oxide.